

**Abstract**

An optical wavelength plan for metropolitan photonic networks uses a cost-effective DWDM optimized architecture allowing the introduction of DWDM into the metro network. In order to implement this architecture cost-effective ways of implementing the optical carrier frequency/wavelength precision required for a Dense Wavelength Division Multiplexing 100 GHz or 50 GHz on-grid solutions are needed. The optical wavelength plan provides WDM density to the access portion of the metropolitan photonic network and DWDM density to the core photonic network. The optical wavelength distribution methods allocate wavelength in the access network in order to optimize non-blocking traffic throughput to the core network.